

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a submission by the National Public
Health Service ("NPHS") (submitter 164)
on the Noise Chapter of the Proposed
Waitaki District Plan ("PDP")

**STATEMENT OF EVIDENCE OF STEPHEN GORDON CHILES
FOR THE NATIONAL PUBLIC HEALTH SERVICE
IN RELATION TO ACOUSTICS**

8 October 2026

QUALIFICATIONS AND EXPERIENCE

1. My full name is Stephen Gordon Chiles. I am self-employed as an acoustician through my company Chiles Ltd. I have been employed in acoustics since 1996, as a research officer at the University of Bath, a principal environmental specialist for the NZ Transport Agency ("NZTA"), as a consultant for the international firms Arup, WSP, and URS (now AECOM), and specialist firms Marshall Day Acoustics and Fleming & Barron.
2. Since 2018, I have been subcontracted by Southern Monitoring Services to provide the Environmental Noise Analysis and Advice Service, advising the Ministry of Health and Health New Zealand / Te Whatu Ora, including the NPHS, on environmental noise.
3. I have degrees of Doctor of Philosophy in Acoustics from the University of Bath, and Bachelor of Engineering in Electroacoustics from the University of Salford. I am a Chartered Professional Engineer and a Fellow of the UK Institute of Acoustics.
4. I have made acoustics assessments and designs for numerous developments including infrastructure, industrial, commercial, recreational and residential activities. I have provided advice on technical acoustics matters with respect to many district plan changes and reviews, and with respect to national regulations and guidance.
5. I am convenor of the New Zealand reference group for 'ISO' acoustics standards, and a member of the joint Australian and New Zealand committee for acoustics standards. I was Chair of the 2012 New Zealand acoustics standards review, Chair for the current road-traffic noise standard revision, Chair for the development of the 2010 wind farm noise standard, and a member for the 2008 general environmental noise standards.

SCOPE OF EVIDENCE

6. I reviewed the noise chapter of PDP and provided advice to the NPHS. Consistent with my advice, the NPHS submission supports some provisions and seeks amendments to others, to provide effective management of adverse noise effects on public health. The amendments sought include both 'mechanical' or drafting issues to ensure the provisions function as intended with appropriate technical methods, and additional or

alternate noise controls for some activities. My evidence provides information on technical acoustics matters with respect to these submission points.

7. I have been separately engaged by KiwiRail and NZTA with respect to their submissions on the PDP and will be providing separate evidence for those parties.
8. I have read the relevant parts of the Section 42A report ("s42A") prepared by Briar Belgrave, including Appendix 4 which sets out comments by Marshall Day Acoustics ("MDA") dated 18 September 2026. Ms Belgrave recommends rejecting some of the NPHS submission points. I consider that with those recommendations the provisions fail to adequately manage adverse noise effects on public health.
9. In my evidence I will address:
 - a. Objectives and policies,
 - b. Exemptions,
 - c. Aircraft,
 - d. Macraes Mining vibration and airblast,
 - e. Temporary activities, and
 - f. Ventilation.
10. My evidence does not include discussion of NPHS submission points that seek to rectify minor issues or drafting errors in the notified PDP, where these points have been supported by Ms Belgrave in the s42A report.
11. I confirm that I have read the Code of Conduct for Expert Witnesses in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and will continue to comply with it while giving oral evidence at the hearing. This written evidence is within my area of expertise except where I state that I am relying on the evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Objectives and policies (NOISE-O1, NOISE-O3, NOISE-P2, NOISE-P6)

12. In my evidence I will only comment on objectives and policies insofar as they relate to consequential provisions from a technical acoustics perspective. I do not purport to comment on objectives and policies with planning expertise.
13. The NPHS submission 164.23 seeks for NOISE-O1 to solely relate to protection of health, rather than the objective being framed around activities generating noise. MDA comments that noise rules do not offer the same protection to people in an industrial area compared to a residential area, and Ms Belgrave also refers to the need to differentiate between zones (s42A, paragraph 142). I agree that different noise limits are appropriate in different zones. In my opinion, that outcome would be consistent with an objective of solely protecting health, which inherently necessitates different noise limits for areas containing different types of receivers.
14. The NPHS submission 164.24 seeks for NOISE-O3 to be amended so that adverse effects from construction are sought to be 'reasonable' rather than 'minimised'. MDA raise concerns with the term 'reasonable' being uncertain and Ms Belgrave agrees (s42A, paragraph 154). In the notified provisions, NOISE-R6 permits construction activities generating up to 70 dB L_{Aeq} during the daytime. This is a relatively high noise level that could cause substantial disturbance to people, and in many cases construction activity could practically achieve lower levels. For this reason, I consider that the notified NOISE-R6 is not 'minimising' construction noise effects, rather it permits a degree of disturbance that could be considered 'reasonable' in a wider context of the necessity and efficiency of construction. If NOISE-O3 retains the wording to 'minimise' effects, then I consider this would be incongruent with the notified NOISE-R6.
15. The NPHS submission 164.25 seeks for NOISE-P2 to be amended so that noise limits are set to protect health in all time periods. MDA highlights the need for lower noise limits at night and Ms Belgrave discusses the same issue (s42A, paragraph 168). I agree that noise limits usually need to be lower at night to protect sleep. However, fundamentally, I consider noise limits should be set for all time periods to protect health. There are a range of adverse health effects that can arise from noise exposure

and only some of these relate specifically to the night period. By only addressing noise limits to protect health at night, the notified policies omit a framework for noise limits to protect health at other times.

16. The NPHS submission 164.27 seeks for NOISE-P6 to be amended to use wording consistent with noise effects assessment. The notified NOISE-P6 appears to use terminology originating from 'FIDOL' assessment of air quality effects. In my experience, for the same approach to be applied in the context of noise effects assessment, requires translation of the air quality factors and terminology to acoustics equivalents. In my opinion, the NPHS submission seeks appropriate wording for noise effects. MDA raises a concern whether the term 'special audible characteristics' is overly limiting. I disagree as this is the established term from NZS 6802:2008 and it is commonly used in noise assessments nationwide.

Exemptions (NOISE-E1)

17. The NPHS submission 164.28 seeks for NOISE-E1 to be amended to remove exemptions for certain activities. Several amendments sought relate to aircraft, which I will discuss separately in the next section of my evidence.
18. In relation to emergency services training activities, MDA makes an assumption that *"...emergency services are well aware of the potential for adverse noise effects, and are unlikely to undertake them in a manner which gives rise to complaints"*. I am aware of noise complaints from emergency services training in other districts. In my opinion, to manage potential noise effects it would be appropriate to remove training activities at night from NOISE-E1 so they are subject to the general noise limits. I also note that key emergency services sites are designated, such that specific requirements do not need to be addressed by exemptions in the noise chapter.
19. In relation to crowd noise, MDA and Ms Belgrave (s42A, paragraph 127) consider this to be implicitly controlled for temporary activities through NOISE-R7. I agree that temporary activity occurrence and time restrictions could provide some limitation on crowd noise, although I consider that additional measures, such as a noise management plan, are also required in some cases. Also, NOISE-R7 would not control

crowd noise that is not associated with a temporary activity. For example, if a sports ground has more frequent events than allowed for as temporary activities. I consider that crowd noise should not be exempt and should either be addressed through NOISE-R7 for temporary activities or else subject to the general noise limits.

Aircraft

20. Noise from aircraft associated with take-off and landing areas is a significant potential cause of adverse public health effects. In my experience, aircraft noise associated with take-off and landing areas has been a common and contentious issue in many districts, often causing significant noise disturbance. In my opinion this is a critical noise source that should be addressed in district plan noise provisions.
21. NPHS submitted to remove exemptions and include noise controls for aircraft take-off and landing areas (164.28, 164.33, 164.47).
22. In relation to NOISE-E1.1, MDA differentiates seasonal aircraft activity for primary production activities in the General Rural Zone from a regularly used airfield. However, seasonal aircraft activity could use a fixed temporary operating area with intense activity over a period, akin to airfield operations. I consider the potential noise effects should be managed by controls in the PDP, either such as setback distances and time limits, or potentially noise limits. Ms Belgrave notes that due to 'plan-stop' requirements, noise in the General Rural Zone will be managed through the operative district plan regardless (s42A, paragraph 120). In my opinion aircraft should either be removed from the exemption in NOISE-E1.1, due to the potential noise effects, or the exemption should be removed entirely if it serves no purpose because activity is subject to the operative district plan.
23. In relation to NOISE-E1.4.a, MDA and Ms Belgrave (s42A, paragraph 122) consider aircraft in flight should be exempted as the activity does not occur on land. This rationale does not address two issues:
 - a. the notified exemption includes aircraft immediately before and after flight (i.e. on land), and

- b. noise from the initial and final stages of flight (i.e. take-offs and landings) are commonly subject to land use controls for airports in numerous district plans.
24. In my opinion, noise from aircraft in flight, as they leave or enter a take-off and landing area, warrants controls, alongside noise from aircraft on the ground immediately before and after flight. These activities have potential to cause significant adverse noise effects that are not addressed by the notified PDP.
25. In relation to NOISE-E1.4.b, MDA considers that 'diversions' should be exempt as they are "*...an infrequent emergency occurrence*". The NPHS submission 164.28 seeks to retain the notified exemption for 'emergency situations' which still encompasses such diversions as described by MDA. However, the NPHS submission seeks to remove the word 'diverted' as it is an ambiguous undefined term that could be interpreted as having wider meaning. For example, Ms Belgrave describes diversions slightly differently from MDA as "*...infrequent or emergency situations...*" [emphasis added] (s42A, paragraph 124).
26. In relation to Omarama Airfield, MDA highlights that NOISE-R9 controls noise sensitive activities around the airfield. That rule only controls noise received and does not control noise emitted. Therefore, noise emitted could subsequently increase, undermining benefits of controls implemented for noise received. MDA assumes that operations at Omarama Airfield are unlikely to increase. I have experience with numerous airfields where established use has evolved or increased to cater for new or expanded activities, which are often unforeseen. Even with the same number of flights, noise can materially change when an aircraft is replaced with a different type. In my opinion, potential aircraft noise effects warrant controls on airfields, which could allow for existing activity, but manage future increases.
27. MDA notes that the airport and helicopter landing area noise standards, NZS 6805:1992 and NZS 6807:1994 are guidance that do not set noise limits. On this basis Ms Belgrave does not consider them suitable for noise standards in the PDP (s42A, paragraph 123). I agree that NZS 6805 and NZS 6807 do not contain mandatory requirements. However, the NPHS submission 164.28 explicitly seeks provisions "*...with*

noise limits from NZS 6805 and NZS 6807...". This could either be achieved by a rule requiring compliance with the limits in those standards, or by reproducing those limits directly within the rule. I am aware of such approaches being implemented in other district plans and I consider this would be suitable and warranted in the PDP.

28. In relation to NOISE-R7 for temporary activities, NPHS submission 164.33 seeks that helicopter noise should not be permitted under this rule. MDA and Ms Belgrave (s42A, paragraph 263) consider that exclusion of helicopters from this provision would conflict with the definition of temporary activities in the PDP. I disagree. NOISE-R7 already includes an exclusion, whereby a specified type of temporary activity (military training) is addressed in a different rule (NOISE-R8). I consider that helicopters could still be in the definition of temporary activities, but with noise subject to a new aircraft noise rule as sought by NPHS.
29. MDA also states assumptions about the likely extent of helicopter activity associated with a temporary activity. The notified PDP does not appear to limit helicopter temporary activity in line with those assumptions, and I do not consider that an appropriate basis for determining suitable provisions.

Macraes Mining vibration and airblast (NOISE-R5)

30. NPHS submission 164.31 seeks to remove NOISE-R5 as the rule does not appear to have a technical foundation. There was no supporting analysis for this provision in the Section 32 report.
31. MDA considers that the notified NOISE-R5 provides "*...reasonable protection to neighbouring zones...*" but does not give the basis for this statement. Ms Belgrave notes that the criteria apply at the zone boundary rather than any notional boundary of adjacent sites (s42A, paragraph 242) but does not reference where such notional boundaries are or any constraints on future development of other sites. The nearest existing house on Macraes Road appears to have a notional boundary at the zone boundary.
32. The vibration and airblast limits in the notified NOISE-R5 are higher and have a narrower frequency range than criteria for managing adverse effects on people, such

as from the examples in Appendix J of AS 2187-2:2006. On this basis, I consider that the notified provisions could give rise to material adverse effects.

33. I am unaware of any information that supports the notified NOISE-R5 as appropriate to protect health. Established standards for vibration and airblast are more stringent than the notified provisions. I therefore consider NOISE-R5 should be removed to avoid potential excessive vibration and airblast exposure of people. Alternatively, the criteria should be reduced, and apply over the full frequency range, in line with example values from AS 2187-2 of 5 mm/s and 115 dB L_{Zpeak} respectively.

Temporary activities (NOISE-R7)

34. NPHS submission point 164.33 seeks limits on the number of days for temporary activities and a requirement for noise management plans.
35. Ms Belgrave sets out that the number of days is separately limited in the Temporary Activities chapter (s42A, paragraph 264). I agree that limits on days in that chapter are adequate to address the issue raised by NPHS.
36. Ms Belgrave considers that a requirement for a noise management plan is not warranted for temporary activities (s42A, paragraph 265). NOISE-R7 provides for a wide range of different types of temporary activities with varying noise effects. I agree that for some of these potential activities a noise management plan might not be warranted, but for a major event over several days or a repeating event, a noise management plan could be an important control for noise effects. I am unaware of a technical basis for a simple delineation between these scenarios. I consider an appropriate balance would be to require a noise management plan for temporary activities that occur on more than one day.

Ventilation (NOISE-S2)

37. I do not purport to have expertise in mechanical ventilation and building services. I have extensive experience in situations where external noise exposure necessitates windows to be closed. I have previously investigated ventilation and temperature implications of this scenario, including commissioning professional advice for NZTA,

and I am on the steering group for an imminent NZTA research project further examining this matter.

38. NPHS submission point 164.35 seeks ventilation and temperature parameters that would allow residents to keep windows closed when required for sound insulation. Ms Belgrave considers this matter is addressed by the Building Code (s42A, paragraph 303). Based on advice I have previously commissioned for the NZTA^{1,2}, I understand that Building Code requirements do not address this situation and are inadequate for this purpose. I understand there is a need for greater air flows, heating and cooling. I am aware of such provisions in many district plans.
39. Ms Belgrave questions the basis for the air flow rate in the NPHS submission (s42A, paragraph 302). The value of six air changes per hour is from the recommended specification in the Beca report¹.

Stephen Chiles
8 October 2026

¹ <https://nzta.govt.nz/assets/Highways-Information-Portal/Technical-disciplines/Noise-and-vibration/Research-and-information/Other-research/Ventilation-systems-installed-for-road-traffic-noise-mitigation.pdf>

² <https://nzta.govt.nz/assets/Highways-Information-Portal/Technical-disciplines/Noise-and-vibration/Research-and-information/Other-research/ventilation-specifications-for-acoustic-treatment-june-2020.pdf>